

# Alternative Fueling Station Locator



**Andrew P. Hudgins**  
**National Renewable Energy Laboratory**  
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Project ID # TI058

This presentation does not contain any proprietary, confidential, or otherwise restricted information.

# OVERVIEW

## Alternative Fueling Station Locator

### Timeline

- Annual, calendar year project
  - January 1st – December 31st
- NREL began supporting project in 1995

### Budget

- Vehicle Technologies Office
- Budget Category:
  - **Technical and Problem Solving Assistance (\$2.775 M)**
  - Consumer information & outreach
  - Local coalition support & partnership development
- \$832,000 (30% of annual allocation for budget category)
  - \$283K for subcontracted activities
  - Supported by multiple DOE programs
- Coordinator support provided through DOE requires station verification

### Barriers Addressed

- Availability of alternative fuels and electric charging station infrastructure
- Consumer reluctance to purchase new technologies
- Lack of technical experience with new fuels and vehicle technologies

### Team Members

#### Internal

- Project lead – NREL
- Web development team – NREL
- Data collection subcontractor – ICF International
- State Fuel Provide & Federal Fleet program collaboration – NREL

#### External

- Ongoing support and data verification – Clean Cities Coordinators
- Collaboration and database enhancements – Vehicle manufacturers and industry partners

# RELEVANCE

## Alternative Fueling Station Locator

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### Objectives

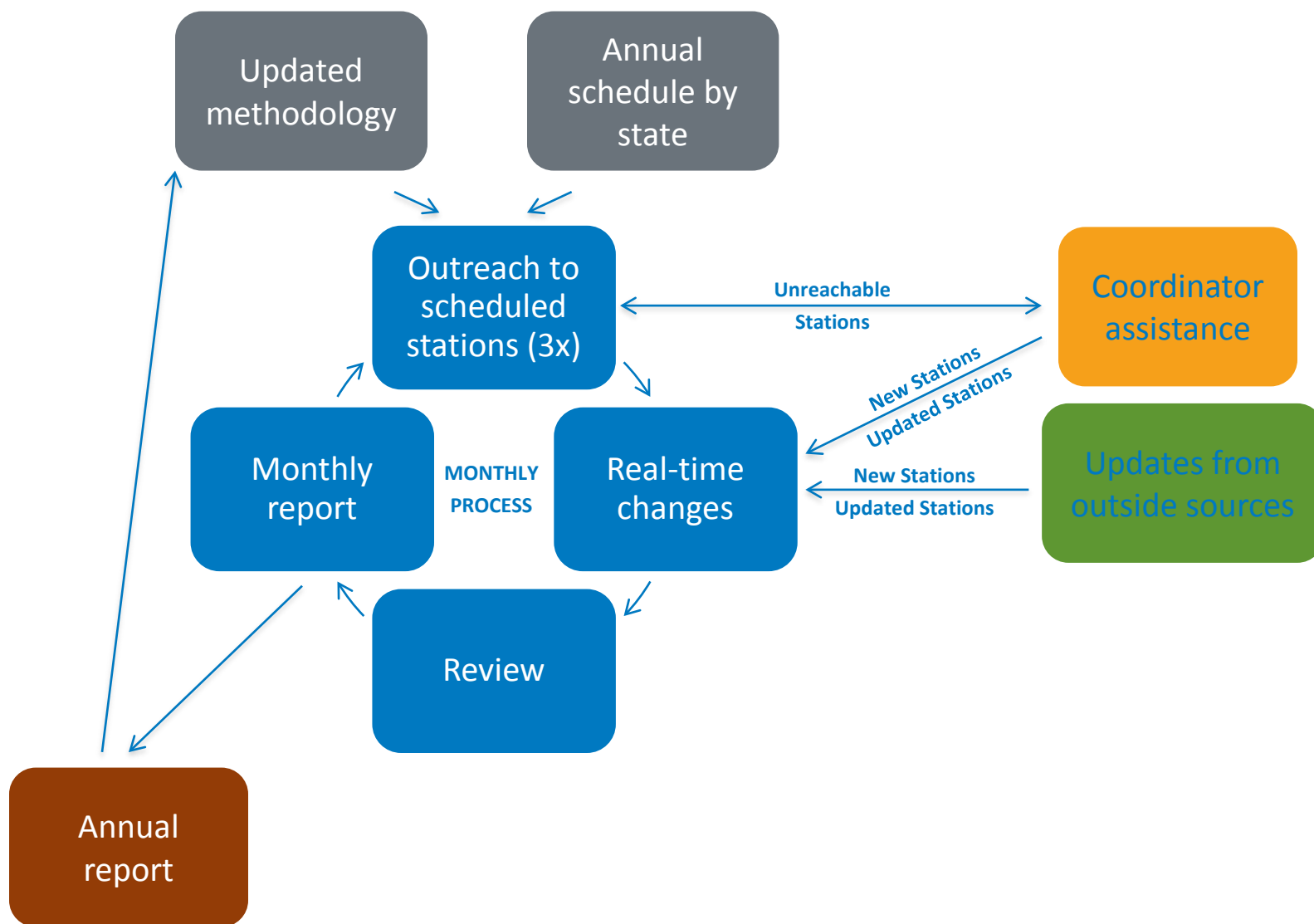
- Provide fleet managers, drivers, and consumers a comprehensive list of stations.
- Provide policy makers and researchers with an up-to-date picture of the alternative fueling infrastructure market.
- Continually improve the database and locator by using innovative approaches and partnering with industry to identify important datasets.
- Ensure station data are made available through a variety of methods that are consistent with trends in data sharing best practices.

### Supports DOE Vehicle Technologies Deployment – Information Dissemination

- Identify technical data/information needed to promote alternative fuels and advanced vehicle technologies.
- Collect data and develop information packages.
- Disseminate data/information via selected information transfer mechanisms.

# PROJECT APPROACH

## Alternative Fueling Station Locator



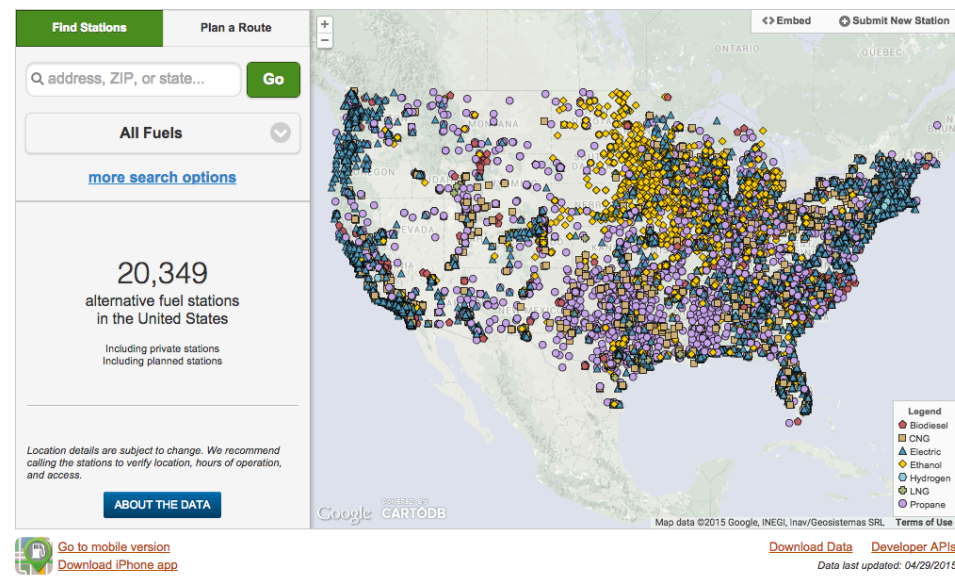
# PROJECT APPROACH

## Alternative Fueling Station Locator

- Obtain information about new stations from trade media, Clean Cities Coordinators, and “Submit New Station” Web form.
- Collaborate with alternative fuel industry groups, infrastructure and fuel providers, and vehicle manufacturers.
- Compare data with other trade organizations and websites offering station location information.
  - Identify discrepancies and develop data sharing processes.
- Conduct continual review of database fields and data update process to improve accuracy and efficiency.
  - Implement changes to the database and data collection methodologies, as necessary.

### Alternative Fueling Station Locator

Find alternative fueling stations near an address or ZIP code or along a route in the United States. Enter a state to see a station count.



# MILESTONES

## Alternative Fueling Station Locator

### FY15 Milestone

Document the subcontracted resources that NREL has used and how they contributed to overall project success during the year.

- ICF supports station locator activities through competitively awarded subcontract.
- Subcontracted activities are described in annual statement of work and data collection methodologies.

### Go/No-Go

Verify compliance with EAct provisions and document how this task fulfills EAct requirements.

- Titles III-V
  - Volunteer Activities
  - State & Fuel Provider Fleets
  - Federal Fleets



Photo courtesy of Weld County, CO.

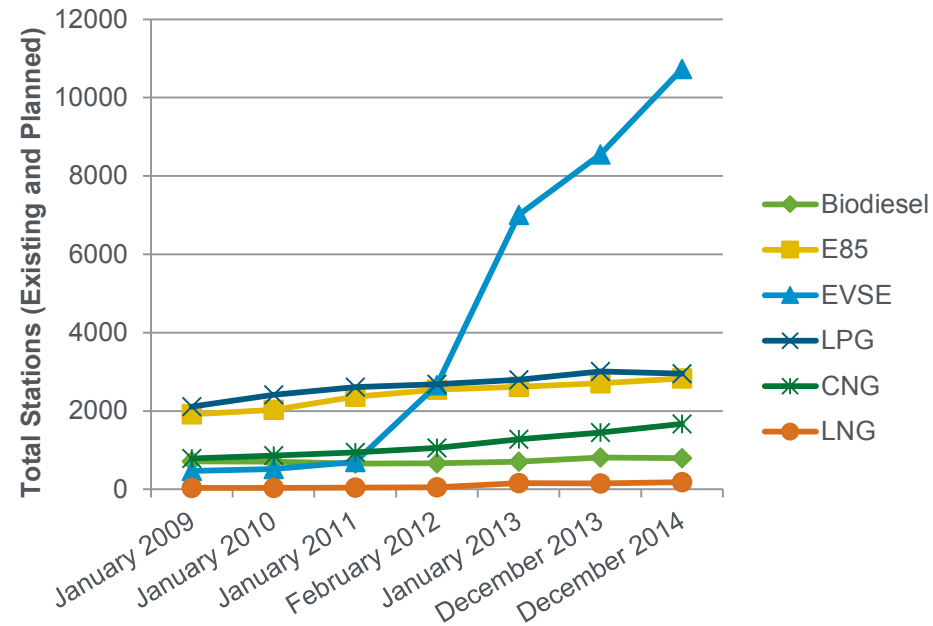


Photo courtesy of Greg Zilberfarb.

# PROJECT ACCOMPLISHMENTS & PROGRESS

## Alternative Fueling Station Locator

- The total number of alternative fueling stations continued to grow in 2014.
- The increase resulted primarily from new Electric Vehicle Supply Equipment (EVSE) locations, which can be attributed to the expanded use of Application Programming Interface (API) data in 2014.
- The growth in EVSE continues to increase, even after a significant growth period in 2012.
- The growth in other fuel types has remained relatively steady, with a slight decrease in growth of biodiesel and propane infrastructure.
  - Biodiesel decreased 2%
  - Compressed Natural Gas (CNG) increased 14%
  - EVSE increased 21%
  - Ethanol (E85) increased 6%
  - Liquefied Natural Gas (LNG) increased 19%
  - Propane (LPG) decreased 2%



Total Stations by Fuel Type (2009–2014)



# PROJECT ACCOMPLISHMENTS & PROGRESS

## Alternative Fueling Station Locator

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### 2014 Accomplishments

- NREL developed and launched a new Web-based administrative tool and database, providing many new efficiencies, cost savings, and abilities.
- California SB 454 legislation signed, requiring all public EVSE in California to be submitted to NREL.
- Exceeded 10,000 station locations for the first time.
- Exceeded 1,000,000 unique views for the first time.

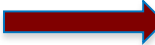



### 2015 Accomplishments

- Expanded industry outreach and collaboration
- Updated advanced search options to allow improved fuel specific searches
  - **CNG:** Fill type, vehicle accessibility, and fill pressure
  - **EVSE:** Charger type, connectors and outlets, and networks
  - **E85:** Mid-level blend availability
  - **LNG:** Vehicle accessibility
  - **LPG:** Vehicle-specific service



# PROJECT ACCOMPLISHMENTS & PROGRESS

## Alternative Fueling Station Locator

Page Type	Page Name
Navigation	EERE Home Page
Navigation	Solar Decathlon: Home Page
Content	How Wind Turbines Work
 Tool	<b>AFDC: Station Locator</b>
Navigation	<b>AFDC: Home Page</b>
Tool/Content	Solar Decathlon: Scores
Content/Tool	EnergyPlus Energy Simulation Software
Navigation	Building Energy Codes Program
 Tool	<b>AFDC: Electric Charging Station Locations</b>
Content/Map	Status of State Energy Code Adoption
Tool	Solar Decathlon: Registration
Content/Navigation	<b>AFDC: Alternative Fuels and Advanced Vehicles</b>
 Tool	<b>AFDC: E85 Station Locations</b>
Animation	How Does a Wind Turbine Work?
Content/Tool	REScheck
Content	Solar Decathlon: Teams
Tool	EnergyPlus Energy Simulation Software: Register
Tool	<b>AFDC: Vehicle Cost Calculator</b>
Tool	Steam Turbine Calculator
Tool/Content	<b>AFDC: Maps and Data</b>
Tool/Content	<b>AFDC: State Laws and Incentives</b>
Content	<b>AFDC: Biodiesel</b>
 Tool	<b>AFDC: Natural Gas Station Locations</b>
Content	Energy Plus: Weather Data
Tool/Content	<b>AFDC: Laws and Incentives</b>

# PROJECT ACCOMPLISHMENTS & PROGRESS

## Alternative Fueling Station Locator

### Stations Database Administrative Tool

[Dashboard](#) [Admin](#) [Case Studies](#) [Coalitions](#) [Fuels](#) [Maps & Data](#) [Publications](#) [Related Links](#) **Stations** [Tools](#)

johanna.levine@nrel.gov [Logout](#)

ADMIN / AFDC /

## Stations

[New Station](#) [Download CSV](#) [Advanced Filters](#) [Clear Filters](#) [Import Stations](#) Mode: ☒ Normal ☐ Review 6 facilities

WF Status	Fuel Type	Status	Name	Address	City	State	Zip
	ELEC	AVBL	4 Park Plaza - ChargePoint	4 Park Plaza	Irvine	CA	92614
	ELEC	AVBL	AMERIGreen	1802 Charter Ln	Lancaster	PA	17601
	ELEC	AVBL	Alexis Test EVSE Dec 12	9300 Lee Hwy	Fairfax	VA	22031
	ELEC	AVBL	City of Lake Forest - City Hall	220 E Deerpath Rd	Lake Forest	IL	60045
	ELEC	AVBL	HB Frazer Co	514 Shoemaker Rd	King of Prussia	PA	19406
	ELEC	AVBL	Portland General Electric - Beaverton Line Center	2213 SW 153rd Dr	Beaverton	OR	97006

ELEC

search by name

search by address

search by city

search by zip

Additional Filters Applied:  
Station: [Workflow Status: UPD](#) [Fuel Status: AVBL](#)  
POC:

#### Station Details

\* Name:

Address:

\* City:

\* State:

Zip:

Phone:

Intersection/Directions:

Station ID:

Station Created:

[Geocode from address](#)

Latitude:

Longitude:

Geocoding Precision:

Geocoding Source:

Efficiency Example: Monthly Reporting – 40 hours reduced to 8 hours

# COLLABORATION & COORDINATION AMONG PROJECT TEAM

## Alternative Fueling Station Locator



Enhanced collaboration was the primary contributor to database growth in 2014.

# COLLABORATION & COORDINATION AMONG PROJECT TEAM

## Alternative Fueling Station Locator

### Clean Cities Coalition Education

Continued training and education for Clean Cities Coordinators, including:

- Webinars for coordinators and Clean Cities University Workforce Development Program interns.
- Annual update of the Station Locator reference sheet for Clean Cities Coordinators and interns.
- Information has been incorporated into the “Coordinator 101” training sessions.

#### Alternative Fueling Station Updates – Clean Cities Coordinator Reference Sheet

ICF International (ICF) provides support to the National Renewable Energy Laboratory (NREL) to maintain the Alternative Fuels Data Center (AFDC) fueling stations database and the Alternative Fueling Station Locator. See the information below on what coordinators should do to report new and updated fueling station information, as well as stations that have gone out of service.

##### How do I add a station?

To add new stations to the AFDC database (including stations that are in the advanced planning stages or “coming soon”), follow these steps:

1. Perform a quick search of the database using the Alternative Fueling Station Locator (<http://www.afdc.energy.gov/locator/stations/>) to ensure the station isn't already in the database. The “Find Stations” query allows users to search for stations by address, zip code, and State. Users can also filter by fuel type and fuel-specific filters, such as electric vehicle supply equipment charging station level, under “more search options.”
  - a. Note: Private stations will not come up in a search unless you select “Include Private Stations” from the “More Search Options” drop-down menu. Likewise, planned stations will not appear unless you select “Include Planned Stations” from drop-down menu.
2. If you are submitting information for a single station or just a few stations, use the online submission form by selecting “Add a Station” on the locator map, or by visiting the following link: <http://www.afdc.energy.gov/locator/stations/place/new>. After submittal, you will receive an email confirmation. Alternatively you may send the station information via email to ICF using the Clean Cities Technical Response Service email address at [technicalresponse@icfi.com](mailto:technicalresponse@icfi.com).
3. If you are submitting information for multiple stations, email ICF at [technicalresponse@icfi.com](mailto:technicalresponse@icfi.com) and provide the information in an Excel spreadsheet, Word document, or via email text (ICF will provide a template upon request).
4. At a minimum, include the fuel type(s), station name, street address, city, State, zip code, station phone number, and/or a point of contact. Refer to the online submission form for other data fields.
  - a. Note: Only biodiesel stations that sell blends of B20 and above for at least part of the year are included.

ICF will follow up with the station directly to confirm the information and gather additional details, such as hours of operation. All stations will be verified before they are added to the database.

##### How do I update or remove existing station information?

To update a station that is already listed in AFDC database, you may do one of the following:

1. Search the database using the Alternative Fueling Station Locator. On the map, select the icon for the station of interest and select “More Details” to view the complete station information. Once on this screen, select “Report a change” in the upper right corner. Make your updates within the form and select Submit. After submittal, you will receive an email confirmation.
2. Send an email to ICF at [technicalresponse@icfi.com](mailto:technicalresponse@icfi.com) and provide the specific station information to be updated.

To request that a station be removed, use the “Report a change” function or send an email to ICF at [technicalresponse@icfi.com](mailto:technicalresponse@icfi.com) and provide the specific station that needs to be deleted. Please include information about why the station was closed or why a fuel type was discontinued (if known). ICF will follow up with the station or point of contact directly to confirm the status.

ICF may also reach out to you directly about stations that have been unreachable or unresponsive during the annual database confirmation process. Your timely assistance in updating or confirming this station information is greatly appreciated.

**Note:** ChargePoint, Blink, and SemaCharge networked station information is now imported directly from the networks on a daily basis. ICF is not able to manipulate the network station information directly. ICF provides feedback to these networks through an established protocol, but coordinators are encouraged to contact the networks directly with changes or questions on specific stations. Please reach out to ICF for network contact information.

##### How long before the information is updated online?

Database modifications are performed on an ongoing basis. As noted above, ICF must verify station details before they are added or updated in the Station Locator. The turn-around time for updates will depend on the completeness of the information provided, as well as the responsiveness of the station or point of contact.

Feel free to contact ICF directly to ask questions or request additional information - 800-254-6735 or [technicalresponse@icfi.com](mailto:technicalresponse@icfi.com)

## Increased education for Coordinators and industry collaboration resulted in a 31% increase in Web form submissions.

# COLLABORATION & COORDINATION AMONG PROJECT TEAM

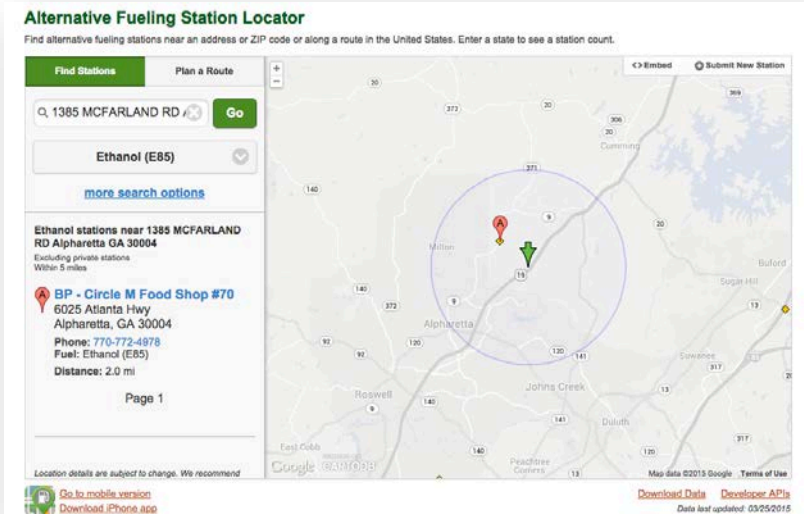
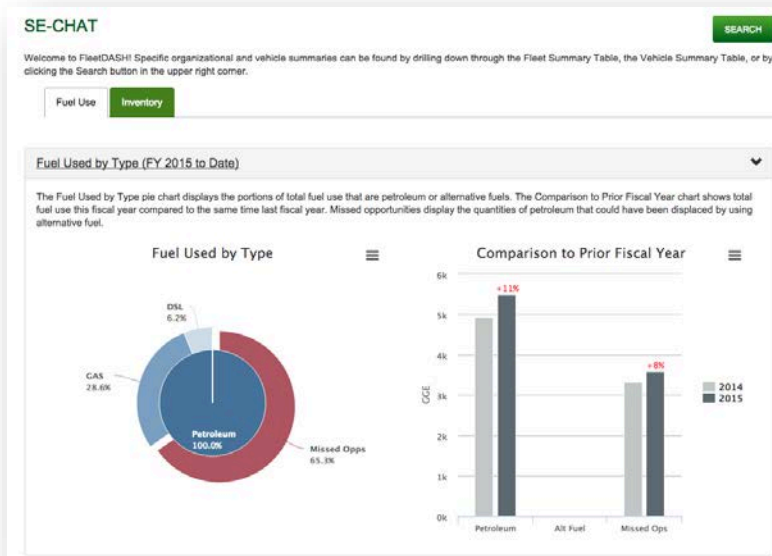
## Alternative Fueling Station Locator

### Coordination with DOE Programs

**Federal Station Updates:** Coordinated with Federal Fleet program staff at NREL to review all federal station updates at least once annually to support Section 246 reporting requirements.

**Ethanol Fuel Sampling:** Supported NREL ethanol sampling activities; 72 E85 fueling stations were contacted to collect the additional information necessary for fuel sampling.

**Workplace Charging Challenge:** Collaborated with DOE staff to develop baseline numbers, data collection methodology, and provide periodic updates to workplace charging station locations.



# COLLABORATION & COORDINATION AMONG PROJECT TEAM

## Alternative Fueling Station Locator

### Examples of Successful Collaboration with External Partners/Team Members

- Natural gas industry and National Partner fleets on station information.
- General Motors on EVSE connector type, directly affecting plug-in vehicle (PEV) development and roll-out
- Renewable Fuels Association (RFA) to collect mid-level blend availability and E85prices.com database cross-check

### 2015 Activities To-Date

- Industry meetings to increase collaboration and strategy development, elevating awareness of the station locator to each organizations' membership.
  - Discuss challenges and opportunities related to fueling station data.



Photo courtesy of AT&T.

#### Greer Commission of Public Works gets green light for fast fill CNG station

BACK



**May 24, 2012.** A compressed natural gas (CNG) fast fill station was approved by Greer Commission of Public Works (CPW) at its monthly meeting Tuesday. The station will be used to serve public and commercial vehicles. AT&T and Frito Lay are the first commercial vehicles committed to fill their vehicles at CPW.

Commissioners approved the approximately \$412,000 fill station, saving about \$80,000 using CPW's manpower. Delivery for the unit is scheduled for mid-November with a mid-December launch date.

CPW has two slow fill CNG stations that service its 2010 Ford F-150 and Fusion vehicles. It takes hours to fill those vehicles opposed to about two minutes for a fast fill station.

CPW has on order two larger trucks and is planning to order nine vehicles that will use compressed natural gas. Fourteen more vehicles will be able to be converted. The City of Greer has budgeted for five vehicles using natural gas and has a memo of understanding with CPW it will convert 15 percent of its fleet over the next two years.



# COLLABORATION & COORDINATION AMONG PROJECT TEAM

## Alternative Fueling Station Locator

### Propane Industry Working Group

- Propane industry representatives convened to discuss revised definitions for propane stations in the database.
- **The goal was to designate two categories of public stations:**
  - Stations set up to fuel vehicles as a primary business
  - Stations that have the ability to fuel vehicles but it is not their primary purpose
- Based on initial criteria, 40% of the public propane stations in the database are listed as primary and 60% are secondary.
- NREL continues to coordinate with propane industry, fleets, and public to revisit and refine station criteria.



Primary Station. Photo courtesy of Curtis Donaldson, Clean Fuel USA.



Secondary Station. Photo courtesy of Andrew Hudgins, NREL.

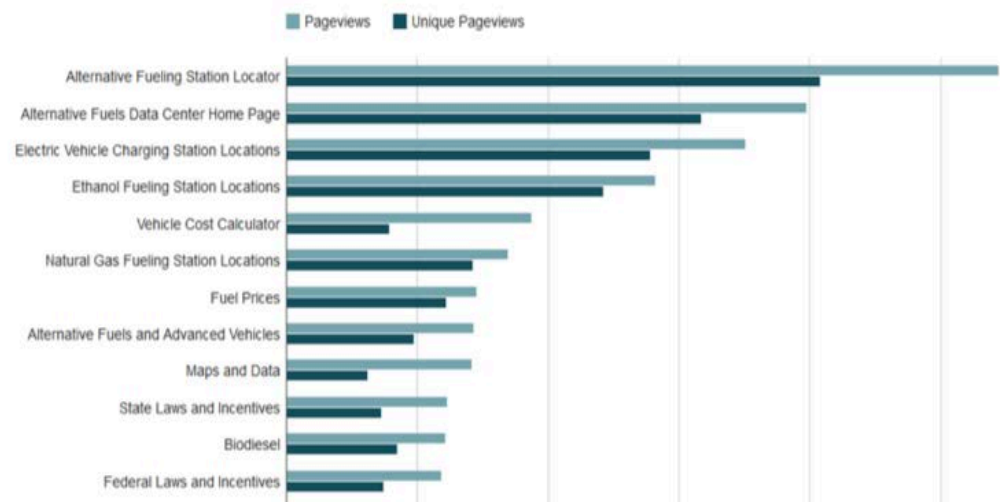


# ALTERNATIVE FUEL MARKET EXPANSION & PETROLEUM REDUCTION POTENTIAL

## Alternative Fueling Station Locator

The station locator and its data continue to expand its reach with its use on not only the AFDC, but also with widgets on other websites and use by developers as a web service.

Top 20 Pages



	Q4 Unique page views	FY14 Total unique page views	Q4 page views	FY14 Total page views
	438,337	1,622,459	561,393	2,108,402
<b>Main Station Locator</b>	<b>200,293</b>	<b>720,944</b>	<b>247,686</b>	<b>939,639</b>
Landing Page	41,034	161,998	54,834	218,091
Route Landing Page	5,086	22,197	6,405	29,022
Results Pages	120,235	427,002	158,018	573,976
Place Pages	33,938	109,747	28,429	118,550
<b>Fuel-Specific Station Locators</b>	<b>214,785</b>	<b>823,875</b>	<b>277,336</b>	<b>1,046,622</b>
Landing Pages	74,987	292,744	90,289	349,029
Route Pages	15,866	49,334	22,093	67,951
Results Pages	96,540	375,895	131,815	501,783
Place Pages	27,392	105,902	33,139	127,859
<b>Station Locator Widgets</b>	<b>23,259</b>	<b>77,640</b>	<b>36,371</b>	<b>122,141</b>
Landing Page	5,750	20,481	13,553	45,751
Route Landing Page	333	1,669	274	2,011
Results Pages	14,308	44,865	19,197	62,001
Place Pages	2,868	10,625	3,347	12,378

# ALTERNATIVE FUEL MARKET EXPANSION & PETROLEUM REDUCTION POTENTIAL

## Alternative Fueling Station Locator

**Developer Network**

HOME DOCUMENTATION COMMUNITY

Documentation » Transportation » Alternative Fuel Stations » Nearest Stations

**Nearest Stations** [GET /api/v1/fuel-stations/v1/nearest]

Return the nearest alternative fuel stations within a distance of a given location.

- Request URL
- Request Parameters
- Response Fields
  - Fuel Station Record Fields
  - Federal Agency Record Fields
  - Exception Record Fields
- Examples
  - JSON Output Format
  - XML Output Format
  - CSV Output Format
- Data Limits
- Errors

**Request URL**

GET /api/v1/fuel-stations/v1/nearest?format={parameter}

**Request Parameters**

The following query parameters may be passed in the request to control the output:

Parameter	Required	Value	Description
format	Yes	Type: string Default: None	The output response format. Given in the URL as the file extension.

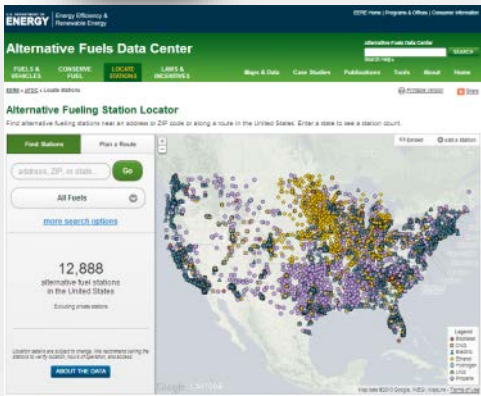
210k hits annually  
560/day

300k screen views annually  
900/day

2M page views annually  
2,700/day

Widget  
122k page views  
334/day

10k  
downloads  
27/day



Data access

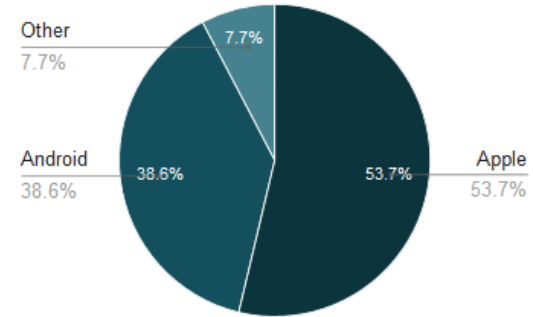
Web view

# ALTERNATIVE FUEL MARKET EXPANSION & PETROLEUM REDUCTION POTENTIAL

## Alternative Fueling Station Locator

### Activities for 2015 and 2016

- Releasing Android station locator App
- Updating iPhone station locator App
- Updating available information for EVSE and natural gas stations
- Strengthening criteria for propane stations
- Education and outreach campaign with the Propane Education and Research Council (PERC) and National Propane Gas Association (NPGA)
- Establishing natural gas station subcommittee with NGVAmerica



#### Alternative Fueling Station Locator

By National Renewable Energy Laboratory

Open iTunes to buy and download apps.



View in iTunes

Free

Category: Navigation

Updated: Sep 19, 2014

Version: 1.0.2

Size: 4.9 MB

Language: English

Seller: National Renewable

Energy Laboratory

© National Renewable

Energy Laboratory

Rated 4+

Compatibility: Requires iOS 6.1 or later. Compatible with iPhone, iPad, and iPod touch. This app is optimized for iPhone 5.

#### Customer Ratings

Current Version:

★★★★ 15 Ratings

All Versions:

★★★★ 35 Ratings

#### Description

The Alternative Fueling Station Locator app helps you find fueling stations that offer electricity, natural gas, biodiesel, E85, propane, or hydrogen.

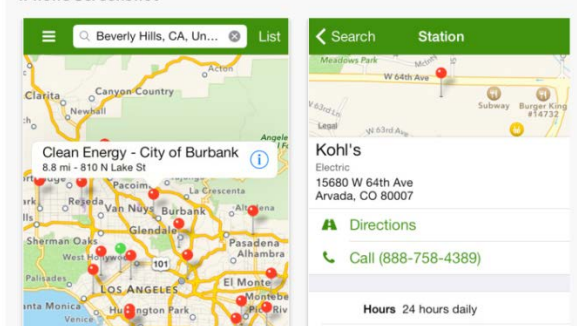
Alternative Fueling Station Locator Support >

...More

#### What's New in Version 1.0.2

- Bug fixes
- iOS 8 compatibility

#### iPhone Screenshot



# SUMMARY

## Alternative Fueling Station Locator

### Continued Success

- Station Locator is the most comprehensive database of alternative fuel stations in the United States.
- Key dataset to reduce barriers to AFVs for fleets, consumers, and policy makers.

### Increased Task Efficiencies

- Web-based administrative tool has decreased the amount of effort required to update stations.
- Decreased level of effort to update and confirm EVSE stations with the addition of the network APIs.

### Industry Collaboration

- Industry collaboration continued to be a primary contributor to database growth in 2014.
- Continual improvement of the database through coordination with industry partners.

